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EXAMINER

BANANKHAH, MAJID A

| ART UNIT | PAPER NUMBER |
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2127

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/606,839

Applicant(s)

KARDACH, JAMES P.

Examiner

Majid A Banankhah

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2127

1. This final office action in response to paper number 7, Amendment B that was filed July 21, 2003. Claims 1-17 are presented for examination. Applicants' amendment necessitated the new ground of rejection with respect to claims 7-11, and 13-15.
2. In view of applicant's amendment, the rejection of claims under 35 USC 112 is hereby withdrawn.
3. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior Office action.
4. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Collins et al. (U.S.Pat No. 6,507,818).

4.1. Per claim 1, Collins teaches, Receiving a real time analog data at a personal computer implementing a general purpose operating system, generating real time event indicating a request to process real-time data; and determining whether the real time event at the personal computer indicating a request to process the real time data (receiving real time mode of operation and real-time event, col. 2, lines 46-68, continued on col. 3, lines 1-9); processing the real-time event if the real time event has a higher priority than the first event (The events in queue 38 preferably are priority-ordered based on relative priorities associated with each type of event, col. 6, lines 49-68, continued on col. 7, lines 1-7).

Per claim 2, continue Processing the first event if the real-time event does not have a higher priority than the first process (According to the priority-ordered structure of queue 38, for example, the highest priority event must be dequeued first, regardless of the order in which the events were enqueued. In contrast, the time-ordered structure of queue 58 requires that internal events are to be dequeued in ascending order of their

Art Unit: 2127

transaction-times, with the lowest transaction-time being chronologically the earliest, col. 11, lines 53-68-, continued on col. 12, lines 1-3).

4.2. Claims 3-6 are rejected under 35 U.S.C. § 103 as being unpatentable over Collins et al. (U.S.Pat No. 6,507,818) in view of Mays et al (U.S.Pat No. 6,035,321).

Per claims 3-6, the reference of Collins fails to explicitly teach of the “saving the state of the first event at the personal computer prior to processing the real-time event; and processing the prior event after processing of the real-time event has completed”. However, saving the state of a thread or an event on behalf of the high priority event, and restoring the state of the prior event for execution is well known in the art as it is evidenced by Mays (Accordingly, when a low level, high priority context is designated for handling an event, **the kernel will use the priority of that context to preempt the execution of tasks having a lower execution priority**, i.e. tasks that are captured by higher level contexts. A pointer to the context is stored in the address space of the task, and a wake up semaphore is posted 1415 for the task, col. 22, lines 10-51). The reason for combining is to give the higher priority events (or task or thread or process) to be processed before the lower priority events and return to the regular execution once the execution of the high priority event is completed. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to allow lower priority events be saved in favor of the high priority events and get back to processing of the lower priority event. The motivation would be obvious because, the lower priority event need to be processed once the urgency of the high priority event no longer exist.

4.3. Claims 13-15, are rejected under 35 U.S.C. § 103 as being unpatentable over Collins et al. (U.S.Pat No. 6,507,818) in view of Mays et al (U.S.Pat No. 6,035,321), further in view of Matsui et al. (U.S. Pat. No. 5,774,701).

Art Unit: 2127

Per claim 13, the modified Collins fails to explicitly teach of a CPU and a timing signal and generating real time event. However, using clock signal to generate real time event is well known in the art as it is evidenced by Matsui (col. 2, lines 46-65), for the reason to drive the processor to operate at different speed. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use timing signal at predetermined time interval to generate real time event and operate the CPU at different speed.

Regarding claim 9, see Mays, col. 14, lines 17-21, and Fig. 7A.

Regarding use of register in claim 14, See Matsui col. 5, lines 18-35.

Per claim 15, See Collins, col. 6, lines 49-68.

4.4. Claims 7-12, 16, and 17 are rejected under 35 U.S.C. § 103 as being unpatentable over Collins et al. (U.S.Pat No. 6,507,818) in view of Mays et al (U.S.Pat No. 6,035,321), further in view of Matsui et al. (U.S. Pat. No. 5,774,701) and further in view of Raamot.

Per claims 7, and 8 the modified Collins fails to explicitly teach of a CPU and a timing signal and generating real time event. However, using clock signal to generate real time event is well known in the art as it is evidenced by Matsui (col. 2, lines 46-65), for the reason to drive the processor to operate at different speed. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use timing signal at predetermined time interval to generate real time event and operate the CPU at different speed. Additionally, regarding claims 7 and 12, 16-17, the modified Collins fails to explicitly teach of analog to digital converter, However, the use of analog to digital converter is well known in the art as it is evidenced by Raamot, in col. 12, lines 30-43, for the reason to be able to process analog data. Therefore, it would have been obvious

Art Unit: 2127

for one ordinary skill in the art at the time the invention was made to use Raamot's analog to digital converter.

Regarding claim 9, see Mays, col. 14, lines 17-21, and Fig. 7A.

Regarding use of register in claim 10, See Matsui col. 5, lines 18-35.

Regarding claim 11 and relative priority, See Collins, col. 6, lines 49-68.

Per claims 12, 16, and 17, the modified Collins fails to explicitly teach of analog to digital converter, However, the use of analog to digital converter is well known in the art as it is evidenced by Raamot, in col. 12, lines 30-43, for the reason to be able to process analog data. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use Raamot's analog to digital converter.

Per claim 7, Mays teaches of operating system and bus in col. 7, lines 51-68, continued on col. 8, lines 1-12.

5. In the Remarks, applicant argues in substance:

- 5.1. That: "Claim 1 recites determining whether a real-time event has a higher priority than a first non-real time event being processed at a personal computer, and processing real-time data if the real-time event has a higher priority than the first non-real time event. Applicant submits that Collins does not disclose such a limitation. Collins discloses operating in either a real-time mode or a simulation mode based on selections by system users. Therefore, it can be inferred that the Collins processor processes all simulated events, or all real-time events, not a mixture of both. Accordingly, Collins is not capable of determining the relative priority of a non-real time event and a real-time event."

This is not found persuasive because Collins teach of a priority ordered queue where the events are arranged according to their priority regardless of the type of the events or being part of a particular type (both external [simulated], and internal [time driven]) (See Collins, col. 11, lines 53-68, continued on col. 12, lines 1-18, According to the priority-ordered structure of queue 38, for example, the highest priority event must be dequeued first, regardless of the order in which the events were enqueued). He even teaches of dequeuing the events according to order in which they have been enqueued (See coll. Col. 12, lines 13018). Additionally, regarding the argument that "*all simulated*

Art Unit: 2127

events, or all real-time events, not a mixture of both", there is no indication in the claim that there are plurality of real-time events. It is inherent that when a (emphasis added) real time event that has a higher priority than the non-real time event is processed, the processor start processing the previous non real time event process. There is no recitation of a mixture of non-real-time and real-time events in the claim. The events are arranged according to their priority. Non real time event is processed if the priority of that particular event is higher than the priority of the real time or non- real time events. Collins teach the same thing in his invention (See, Collins, col. 11, lines 26-36, As a result, the external events from priority-ordered queue 38 and internal events from time-ordered queue 58 can be properly interleaved to support the capability of system 10 to operate the simulation with captured real-time events. As indicated by line 68, simulation controller module 20 manages time-ordered queue 58 by dequeuing internal events when simulated time reaches the time-stamps on the respective events). So determining factor is the priority and not the type of the events). Priority ordered processing (regardless of type) is notoriously well known in the art. The only reason the events are arranged according to their priority is to give real time events a higher class and not to miss them. When all the events (regardless of being real time or non real time) are arranges according to their priority, then what is the difference whether they are real time or non real time.

- 5.2. That : "Claim 13 recites an event handler coupled to an event mechanism to process real-time events received from the event mechanism upon determining the relative priority between the real-time events and non-real-time events. Thus, for the reasons described above with respect to claim 1, claim 13 is also patentable over Collins. Because claims 14-17 depend from claim 13 and include additional limitations, claims 14-17 are also patentable over Collins".

In response examiner disagree. First non-real-time events does not play any significance in this claim. Assuming the relative priority of real time events and non real time events are determined and "three" real time events have higher priority in sequence. Then the processor will process the higher priority non real time events in sequence. Additionally, Collins teaches of this in col. 11, lines 26-36).

- 5.3 on page 8, applicant argue :

That : "Nevertheless, Mays does not disclose or suggest generating real-time events upon receiving real-time analog data and processing the real-time analog data if the real-time event has a higher priority than a non-real-time event. As discussed above, Collins does not disclose or suggest such a limitation. Thus, any combination of Collins and Mays would not disclose or suggest generating real-time events upon receiving real-time analog data and processing the

Art Unit: 2127

real-time analog data if the real-time event has a higher priority than a non-real-time event. Consequently, the present claims are patentable over Collins in view of Mays".

In response, regarding this newly amended language, first it must be pointed out "analog data" is data that is represented by continuously variable change in a physical property such as voltage, or perhaps fluid pressure, or rotation. The physical data in the form of analog input is transformed into digital output by a "digital to Analog Converter". For the computer it is really "digital signal". Therefore, for the computer it is really the digital data in real time form which it generates "event signal" and upon receiving the "event signal" the "digital signal" from the "analog data" is processed. In short, processing "analog data" is really processing "digital signal" and this is not a patentable subject matter. Regarding the processing of the real time data if the real time event has a higher priority than a non-real time event, once again, the criteria is "PRIORITY" and not the type of the events. If we had classified the events into different types and the selection mechanism was affected by the type of the events, then the real-time and non-real-time was a factor in selection mechanism. In an environment where the selection is based on priority and a first event is processed because of its high priority, then whether it is a real-time or non real-time does not affect the steps of the method.

5.4 On page 9 applicant argue that:

"However, Matsui does not disclose or suggest generating real-time events upon receiving real-time analog data and processing the real-time analog data if the real-time event has a higher priority than a non-real-time event. As discussed above, Collins and Mays do not disclose or suggest such a limitation. Thus, any combination of Collins, Mays and Matsui would also not disclose or suggest generating real-time events upon receiving real-time analog data and processing the real-time analog data if the real-time event has a higher priority than a non-real-time event. Accordingly, the present claims are patentable over Collins in view of Mays, and further in view of Matsui."

In response, the argument is not persuasive for the same reasons as discussed in section (5.3.) of this office action. Additionally, the reference of Matsui is used for showing the obviousness with respect to "timing signal". Applicant is trying to attack the references separately. Applicant argues the patentability of claims by individually addressing the references used to reject the claims. It is noted that the claims above are rejected as being obvious using a combination of the references. Applicant can not show non-obviousness by attacking the references individually where as here the rejections are

Art Unit: 2127

based on a combination of references, **In re Keller**, 208 USPQ 871 (CCPA 1981). Matsui is used to showing timing signal and generating real-time event.

5.5. Further on page 9 applicant argue that:

“Raamot discloses a digital-to-analog converter having a high degree of resolution. See Raamot at Abstract. However, Matsui does not disclose or suggest generating real-time events upon receiving real-time analog data and processing the real-time analog data if the real-time event has a higher priority than a non-real-time event. As discussed above, neither Collins, Mays nor Matsui disclose or suggest such a limitation. Thus, any combination of Collins, Mays, Matsui and Raamot would also not disclose or suggest generating real-time events upon receiving real-time analog data and processing the real-time analog data if the real-time event has a higher priority than a non-real-time event. Accordingly, the present claims are patentable over Collins in view of Mays, further in view of Matsui and further in view of Raamot.”

Regarding the analog to digital data and “generating real-time event upon receiving analog data” it is submitted that, every reference relies to some extent on knowledge of persons skilled in the art to complement that, which is disclosed therein. **In re Bode**, 550 F.2d 656, 193 USPQ 12 (CCPA 1977). The test for combining references is not what the individual references themselves suggest but rather what the combination of the disclosures taken as a whole would suggest to one of ordinary skill in the art. **In re McLaughlin**, 170 USPQ 209 (CCPA 1971). A reference is to be considered not only for what it expressly states, but for what it would reasonably have suggested to one of ordinary skill in the art. **In re DeLisle**, 160 USPQ 806 (CCPA 1969). The reference of Raamot is used to show “analog to digital converter” which is discussed in section 5.3 above. Converting “analog data” to “digital signal” is notoriously known in the art and does not constitute a patentable subject matter.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS

Art Unit: 2127

ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE The application has been amended as follows:

ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Maid A. Banankhah** whose voice telephone number is (703) 308-6903. A voice mail service is also available at this number.

All response sent to U.S. Mail should be mailed to:

**Commissioner of Patent and Trademarks
Washington, D.C. 20231**

Hand-delivered responses should be brought to Crystal Park Two, 2021 Crystal Drive, Arlington, VA, Six Floor (Receptionist). All hand-delivered responses will be handled and entered by the docketing personnel. Please do not hand deliver responses to the Examiner.

All Formal or Official Faxes must be signed and sent to either (703) 308-9051 or (703) 308-9052. Official faxes will be handled and entered by the docketing personnel. The date of entry will correspond to the actual FAX reception date unless that date is a Saturday, Sunday, or a Federal Holiday within the District of Columbia, in which case the official date of receipt will be the next business day. The application file will be promptly forwarded to the Examiner unless the application file must be sent to another area of the office, e.g., Finance Division for fee charging, etc.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Maid Banankhah
9/29/03

MAID A. BANANKHAH
[Signature]